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The relationship between hope in healthcare employees and social support and coping ability during the outbreak process

Hope in healthcare employees

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Abstract
Aim: In this study, it was aimed to examine the relationship between the concept of hope that is present in healthcare professionals during the COVID-19 pandemic process and the possible relationship between perceived social support and coping ability.
Material and Method: Sociodemographic and Clinical Data Form, State-Trait Anxiety Inventory (STAI), Trait Hope Scale (THS), Multi-Dimensional Perceived Social Support Scale (MDPSSS), Coping with Stress Scale (CSS) were applied to 170 healthcare professionals working in the pandemic hospital and meeting the study criteria.
Results: The THS score was found to be the lowest in those working in both the service and emergency service/polyclinic, and a statistically significant difference was found between this group and those working in the service and those working in the emergency/outpatient clinic (p <0.001). The MDPSSS score of the group working in both departments was the lowest and this decrease was statistically significant (p=0.002). THS scores of the doctors were lower than nurses, and this lowness was statistically significant (p=0.001). A positive significant correlation was found between the total score of THS and CSS and MDPSSS scores (r=0.226, p=0.003) (r=0.194, p=0.023).
Discussion: Perceived social support and hope levels decrease as the number of working units of health personnel increases during the Covid-19 pandemic process. Levels of hope differ according to the professions. The level of hope is positively associated with the coping ability and perceived multi-dimensional social support. This study has revealed that functional coping attitudes and perceived social support in healthcare professionals during pandemic periods are associated with high levels of hope.

Keywords
Social support; Coping ability; COVID-19; Healthcare workers; Hope concept

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Introduction

Severe Acute Respiratory Syndrome-Coronavirus-2 (SARS-CoV-2) spread rapidly to many countries in the world with its high contamination property and was declared as a pandemic by the World Health Organization on January 31, 2020.

In all recent outbreaks such as SARS, Ebola, MERS – CoV infections and COVID-19 that we are currently experiencing, which have had fatal consequences, healthcare professionals have been the most affected and at risk of harm [1-4]. In 2003, psychiatric symptoms were reported in 27% of healthcare professionals during the SARS-CoV epidemic in Singapore [5]. In the COVID-19 epidemic, stress, anxiety, hopelessness, insomnia, and anger have been seen in health workers in Wuhan due to mental health problems such as the high risk of infection they have been exposed to, overwork, and isolation [6].

Hope is defined as a cognitive process that expresses the capacity of individuals to produce paths for their goals and to act in accordance with the path they produce. Individuals with high levels of hope exhibit motivating attitudes when faced with worrying problems. Therefore, the concept of hope and anxiety are interrelated structures [7]. We believe that the most important motivation for healthcare professionals who work devotedly in times of pandemic is hope, and social support is important for individuals to avoid despair.

Perceived social support is the person's belief that she/he has strong connections with other people and his/her cognitive perception that she/he will be supported when necessary. Individuals with a high level of social support adapt to stress more easily [8]. We think that perceived social support, which we think is one of the most important requirements during the pandemic periods, can be effective for individuals to control their anxiety.

State anxiety is associated with subjective and momentary anxiety and is temporary anxiety caused by environmental stress. Trait anxiety is that a stressful situation is perceived as dangerous, and a person shows anxiety symptoms even in the absence of danger [9]. For healthcare professionals, the risk of decaying and death is very important stress factors [10]. Although the time spent by the healthcare professionals in the hospital increases even more during the COVID-19 epidemic period, it may have increased the workload, but it may have been a source of stress outside the working hours. In these cases, methods of coping with the stress are important for a person. Coping, on the other hand, is cognitive and behavioral efforts that individuals make to learn to reduce or tolerate negative or stressful life events and is associated with psychological well-being [11].

Stress and anxiety of physicians, nurses, and other personnel who are in direct contact with patients can play an active role in pandemic management. In our study, it is among the determined goals to discuss the effects of factors affecting anxiety in epidemic periods that reveal anxiety and we aimed to examine the relationship between the concept of hope that is present in healthcare workers with the social support perceived by the healthcare worker and the coping ability created by the healthcare worker.

Material and Methods

Ethics committee approval was obtained for our cross-sectional study from XXXX University Hospital. This ethics committee approval was also reported to the Ministry of Health and the study was carried out in accordance with the Helsinki Declaration. The study included 170 healthcare professionals working in the pandemic hospital between March 2020 and April 2020, which has recorded the highest number of COVID-19 pandemic cases in Turkey. While the volunteering condition was required for the participants, the fact that they had physical and mental illnesses that could prevent them from responding to questionnaires and scales, and that they were illiterate was accepted as exclusion criteria. Sociodemographic and Clinical Data Form, State-Trait Anxiety Inventory (STAI), Trait Hope Scale (THS), Multi-Dimensional Perceived Social Support Scale (MDPSSS), Coping with Stress Scale (CSS) were applied to all of the participants.

1. Sociodemographic and Clinical Data Form

This is a form prepared by us considering the objectives of the study, which includes socio-demographic information such as age, gender, marital status, educational status, profession, place of residence, economic status, family structure in individuals included in the study.

2. Trait Hope Scale (THS)

It was developed by Snyder et al. (1991) to determine the constant level of hope of individuals aged 15 and over. The scale, which consists of twelve items, includes four items regarding the alternative ways of thinking of hope and acting thought dimensions. The lowest score that can be obtained from the scale is 4, and the highest score is 32. The high score obtained indicates that the level of hope is high [12].

3. Multi-Dimensional Perceived Social Support Scale (MDPSSS)

The form of the scale developed in 1988 by Zimmet et al. was revised in 2001. The scale, which is Likert type, consists of 12 questions in total. Each question was created with seven grades (1-7 points) ranging from "absolutely no" to "absolutely yes". As a result, the high score obtained shows that perceived social support is high [13].

4. Coping with Stress Scale (CSS)

This scale is a 5-point Likert-type scale (5=totally suitable-1=not suitable at all). A total score of 23-115 is obtained from 23 items in the CSS. It was developed by Folkman and Lazarus. The scale consists of 30 items and is a 4-Likert (0=not suitable at all, 1=not suitable, 2=suitable, 3=completely suitable) type [14].

5. State-Trait Anxiety Inventory (STAI)

It was developed by Spielberger et al. in 1970. The State Anxiety Inventory of the scale, which consists of 40 items in total, measures a person's anxiety at a certain time, and the Trait Anxiety Form measures the person's susceptibility to anxiety experience in a fixed personality structure. It consists of 4-Likert type and twenty items. The total score value obtained from both scales varies between 20 and 80, and the score between 26 and 42 is accepted as average. A high score indicates a high level of anxiety and a small score indicates a low level of anxiety [15].

Statistical Analysis

Analyzes were evaluated in SPSS (Statistical Package for Social Sciences; SPSS Inc., Chicago, IL) 22 package program. In the study, descriptive data were shown with n, % values in categorical data and average values ± standard deviation, median, interquartile range (25-75 percentile values) in continuous data. The Chi-square analysis (Pearson Chi-square) was used to compare intergroup categorical variables. The compliance of continuous variables to normal distribution was evaluated with the Kolmogorov-Smirnov Test. Independent Samples t-test was used for comparison of variables that comply with a normal distribution, One Way ANOVA test was used when more than two groups were compared, the Mann-Whitney U Test was used for comparison of variables that do not comply with normal distribution, and the Kruskal-Wallis test was used when more than two groups were compared. Pearson or Spearman Correlation analyses were used to compare the measurement data. The statistical significance level was accepted as p <0.05 in the analysis.

Results

A total of 170 healthcare workers, 94 (55.3%) males and 76 (44.7%) females, with the mean age of 33.36 ± 7.85 years were included in the study. It was observed that 113 (66.5%) of the healthcare professionals were married, 131 (77.1%) were university graduates, 138 (81.2%) lived in the city and 134 (78.8%) had moderate economic status. Forty (23.5%) of the participants were doctors, 80 (47.1%) were nurses and 50 (29.4%) were other healthcare professionals (health officers, laboratory and x-ray technicians, medical secretaries, servants). Other socio-demographic characteristics of healthcare professionals are shown in Table 1.

When the state and trait anxiety scores were evaluated in the whole group, the mean state anxiety scale (WHO) score was 41.5 ± 9.2, and the mean trait anxiety scale (SDI) score was 41.4 ± 8.9. The total mean score of the State-Trait Anxiety Inventory (STAI) was 82.5 ± 16.7. While the mean trait hope scale (SRS) total score was 54.4 ± 14.5, the scale's acting thoughts sub-dimension mean score was 26.8 ± 7.2 and the alternative thoughts sub-dimension mean score was 27.4 ± 8.03. The total score average of the coping stress scale (CSS) of the whole group was found as 60.8 ± 18.1, and the total score average of the multi-dimensional perceived social support scale (MDPSSS) was found as 73.1 ± 22.2.

Health personnel were divided into 3 as both emergency/outpatient and service workers (Group 1), emergency/outpatient (Group 2) and only service workers (Group 3) according to COVID-19 workplaces. According to the COVID-19 workplace, a statistically significant difference was found between the scores in terms of STAI total (p <0.001). It was observed that this difference was due to the difference between all groups. The total STAI mean score of those who were separated from their family was found to be significantly higher than those living with their family during the COVID-19 pandemic process (p=0.034). According to the profession group, a significant difference was found in terms of total score in the THS (p=0.001). It was found that this difference is only between doctors and nurses (Figure 1). Again, according to the COVID-19 workplace, a statistically significant difference was found between the scores in terms of THS total (p <0.001). It was observed that this difference arises between the group working in the service and those working in both the service and emergency/polyclinics. The total THS mean score of those who were separated from their family was found to be significantly higher than those living with their family during the COVID-19 pandemic process (p=0.009) (Table 2).

1) According to the COVID-19 working unit, a significant difference was found in terms of STAI state anxiety (p <0.001). It was observed that this difference originated from all three places (p=0.02 for emergency service/polyclinic, p <0.001 for both emergency service/polyclinic-both, p=0.015 for both services) (Table 2).

2) According to the COVID-19 study unit, a significant difference was found in terms of trait anxiety (p=0.004). It was observed that this difference was only due to the difference between those working in the emergency/outpatient clinic and those working in both places (p=0.091 for emergency/polyclinic-service, p=0.007 for emergency/polyclinic-both, p=0.068 for service-both) (Table 2).

3) The STAI trait anxiety scores of those who separated from their families during the COVID-19 pandemic process were significantly higher than those who did not separate (p=0.009) (Table 2).

4) A significant difference was found between the professional group in terms of the THS acting sub-dimension (p=0.002). This difference was statistically significant only between doctors and nurses (p=0.001 for doctor-nurse, p=0.212 for doctor-other health personnel, p=0.265 for nurse-other health personnel) (Table 2).

5) A significant difference was found between the professional group in terms of the THS alternative sub-dimension (p=0.001). This difference was significant between doctors and nurses and between doctors and other healthcare professionals (p=0.001 for doctor-nurse, p=0.043 for doctor-other health personnel, p=0.961 for nurse-other health personnel) (Table 2).

6) According to COVID-19 workplace status, a significant difference was found in terms of THS acting (p <0.001). This difference arises from the difference between COVID-19 emergency or outpatient employees and the group working in the service, and those working in both places and those working in the service (p=0.049 for emergency/polyclinic-clinic, p=1,000 for emergency/polyclinic-both, p <0.001 for service-both) (Table 2).

7) According to the COVID-19 workplace status, a significant difference was found in terms of THS alternative (p <0.001). This difference was found to be related only to the difference between those working in the service and the group working in both (p=0.611 for emergency/outpatient-clinic, p=1,000 for emergency/outpatient-clinic-both, p <0.001 for service-both) (Table 2).

8) The staff who lived separately from their families during the COVID-19 pandemic had significantly higher scores on both the THS acting thought and the THS alternative thoughts (p=0.021), (p=0.029) (Table 2).

9) Alternative THS scores of men were found to be significantly higher than that of women (p=0.029) (Table 2).

Table 1. Sociodemographic characteristics of health professionals

	Number	%
Age (Avg±SD)	33.36±7.85	
Gender		
Male	94	55.3
Female	76	44.7
Marital status		
Married	113	66.5
Single	57	33.5
Educational status		
High school and lower	39	22.9
Graduate	131	77.1
Residential area		
Village	4	2.4
Town	28	16.5
City	138	81.2
Economic status		
Low	10	5.9
Moderate	134	78.8
High	26	15.3
Profession		
Doctor	40	23.5
Nurse	80	47.1
Other healthcare professional	50	29.4
Duration of work		
<1 year	12	7.1
1-5 years	35	20.6
>5 years	123	72.4
Workplace		
COVID emergency or polyclinic	9	5.3
COVID service	93	54.7
Both	68	40.0
Being separated from the family during the COVID process		
Yes	63	37.1
No	107	62.9
Is there a risky group at home?		
Yes	72	42.4
No	98	57.6
Any medical illness		
Yes	22	12.9
No	148	87.1

The CSS score of the high school and lower group was significantly higher than that of the university graduate (p=0.049). A significant difference was observed between the professional groups in terms of the CSS score (p <0.001). It was observed that this difference resulted from the difference between doctor and nurse and doctor and other healthcare personnel (Figure 1).

A significant difference was found between COVID-19 work units in terms of MDPSSS (p=0.002). This difference seemed to be related to the difference between those who worked in both places and those who worked in the emergency/outpatient clinic, and those who worked in both places and those who worked in the service (Table 3).

A positive significant correlation was found between STAI total score and the CSS (r=0.267, p <0.001). A negative significant relationship was found between STAI total score and MDPSSS score (r=-0.400, p <0.001). A positive correlation was found between the total score of THS and CSS (r=0.222, p=0.003). It was observed that there was a positive and significant relationship between the THS total score and MDPSSS (r=0,174, p=0,023) (Figure2).

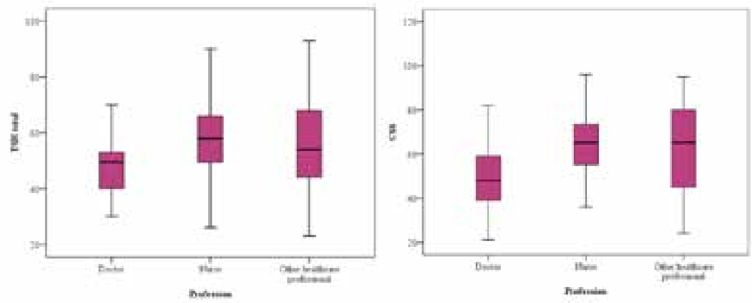

Figure 1. THS and CSS Score by Professions

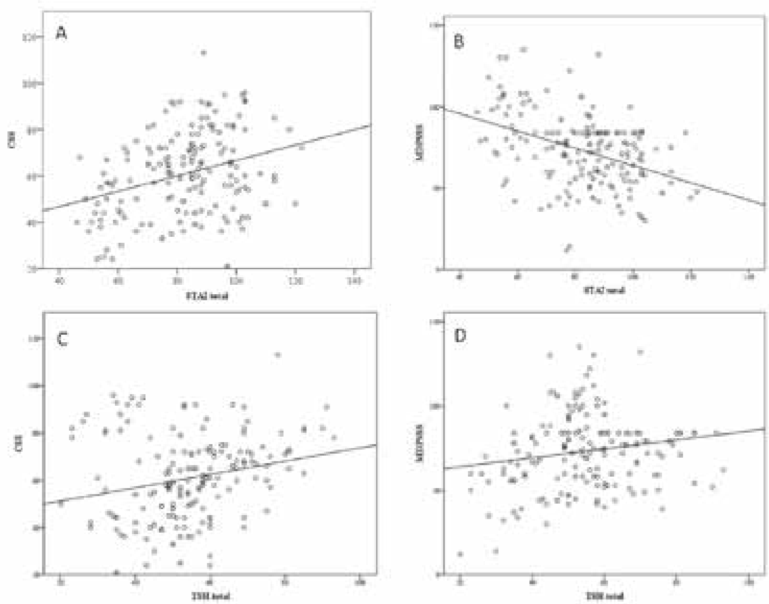

Figure 2. Correlation analysis A): CSS and STAI scale score, B): MDPSSS and STAI scale score, C): CSS and THS scale score, D): Correlation between MDPSSS and THS scale score

Discussion

According to the results obtained from this research, no significant difference was found between the scale scores (STAI, THS, CSS, MDPSSS) of the employees according to age, gender, marital status, education, income level, profession durations, whether there was additional disease and whether they lived with a risky individual at home. These sociodemographic features do not predict the level of anxiety, hope levels, perceived social support, and coping with the stress of the personnel. This may be related to the development of different life situations due to the personal characteristics of the participants. In terms of age and professional durations, the fact that employees can be more conscious in coping with problems and stress can increase their anxiety level during

Table 2. Distribution of STAI and THS total scores of health professionals by sociodemographic characteristics

	STAI Total		STAI state		STAI trait		THS Total		THS acting		THS alternative	
	Median (IQR)	p	Median (IQR)	p	Median (IQR)	p	Median (IQR)	p	Median (IQR)	p	Median (IQR)	p
Gender												
Male	82.7±17.8	0.920*	42.1±9.5	0.420*	41.1±9.6	0.532*	54.5 (49-67)	0.062***	27 (24-30)	0.364***	28 (23-32)	0.029***
Female	82.4±15.5		40.9±9.0		41.9±8.2		53.5 (43.5-60)		27 (21-30)		25 (20-30.5)	
Profession												
Doctor	84.2±17.1		43.3±8.9		41.0±9.4		49.5 (40-53)[a]		24,5 (20,5-27,5)[a]		24 (20-27)[a]	
Nurse	83.6±15.9	0.331**	42.3±9.2	0.051**	42.1±8.0	0.627**	58 (49.5-66)[b]	0.001****	28.5 (25-31)[b]	0.002****	30 (23-32.5)[b]	0.001****
Other healthcare professional	79.6±17.8		38.9±9.4		40.7±10.2		54 (44-68)[a,b]		27 (20-31)[a,b]		27.5 (23-32)[b]	
COVID Work place												
Emergency or polyclinic	66.1±20.6[a]		32.0±10.0[a]		34.1±10.7[a]		51 (50-52)[a,b]		25 (24-26)[a]		26 (25-28)[a,b]	
Service	80.3±15.5[b]	<0.001**	40.4±8.4[b]	<0.001**	40.5±8.9[a,b]	0.004**	58 (50-69)[a]	<0.001****	29 (26-32)[b]	<0.001****	30 (25-35)[a]	<0.001****
Both	87.9±16.0[c]		44.4±9.2[c]		43.6±8.3[b]		49.5 (36-55)[b]		24.5 (20-28)[a]		24 (18-29)[b]	
Being separated from the family during the COVID process												
Yes	86.1±16.4	0.034*	43.3±9.0	0.059*	43.8±8.1	0.009*	58 (49-69)	0.009***	28 (25-32)	0.021***	29 (25-34)	0.015***
No	80.5±16.7		40.5±9.3		40.1±9.2		52 (43-60)		26 (21-30)		25 (20-31)	

IQR: Interquartile range, *Independents t- test, **One way ANOVA test, ***Mann-Whitney U test, ****Kruskal-Wallis test were applied.

Table 3. Distribution of CSS and MDPSSS total scores of health professionals by sociodemographic characteristics

	CSS		MDPSSS	
	Median (IQR)	p	Median (IQR)	p
Gender				
Male	60.5 (48-72)	0.829*	77 (60-88)	0.174*
Female	61 (45-72)		72 (55.5-84)	
Marital status				
Married	61 (45-72)	0.843*	75 (58-84)	0.414*
Single	61 (49-72)		72 (53-84)	
Educational status				
High school and lower	68 (51-81)	0.049*	71 (58-84)	0.844*
Graduate	59 (45-72)		75 (58-84)	
Profession				
Doctor	48 (39-59)[a]		71.5 (47.5-90)	
Nurse	65 (55-73.5)[b]	<0.001**	75 (60-84)	0.374**
Other healthcare professional	65 (45-80)[b]		73 (60-100)	
Duration of work				
<1 year	60.5 (57-73.5)		59.5 (53-78)	
1-5 years	65 (50-72)	0.553**	74 (56-84)	0.192**
>5 years	60 (44-73)		75 (60-85)	
COVID Workplace				
COVID emergency or polyclinic	44 (28-55)		81 (78-95)[a]	
COVID service	62 (50-72)	0.092**	79 (62-84)[a]	0.002**
Both	60.5 (44-80)		65.5 (53-78)[b]	
Being separated from the family during the COVID process				
Yes	64 (53-73)	0.241*	75 (55-84)	0.324*
No	59 (44-72)		74 (58-88)	
Is there a risky group at home?				
Yes	65 (49-78)	0.101*	72 (56-84)	0.384*
No	59 (44-72)		75.5 (58-84)	

IQR: Interquartile range, * Mann-Whitney U test, ** Kruskal-Wallis test were applied.

difficult times such as pandemic.

In the study, it was determined that the STAI mean scores differed according to COVID-19 workplaces and whether the healthcare professionals spent this process separately from their families. Personnel were divided into 3 according to COVID-19 workplaces as follows: working in both emergency service/polyclinic and working in service (Group 1), and working in emergency service/polyclinic (Group 2) and working in service (Group 3). The STAI average score of Group 1 was found to be the highest. With an increase in the number of units in which medical personnel work, state and trait anxiety levels have also increased. During the Ebola outbreaks in Sierra Leone in 2014 and in the Democratic Republic of the Congo in 2018, a high level of concern has been reported among healthcare professionals in direct contact with infected patients [2]. COVID-19 services are places where the time spent with the patient and the virus exposure are intense during the pandemic process. Due to this virus with a high transmission rate, considering that healthcare workers in COVID-19 services are at higher risk of infection, we attribute that service workers have higher levels of anxiety than working in emergency service/polyclinic due to this condition.

STAI and trait anxiety scores of the personnel who were separated from their families were significantly higher than those who lived with their families during the COVID-19 pandemic. In the case of trait anxiety, the person shows anxiety symptoms even in the absence of danger and becomes constantly uneasy and nervous. This situation can be explained by the fact that the personnel are deprived of the social support they receive from their families in this process and their social relations decrease.

Alternative ways from the components of hope, defined as the expectation of a positive future, are defined as the person's ability to formulate possible goals, and the acting thought is defined as thoughts about actions shown to achieve the goal [16]. These thoughts can provide a person to motivate oneself

[16]. A significant difference was found between the doctors and nurses by profession in terms of THS score in the study. The fact that doctors have the lowest THS scores may be due to the fact that they are the first occupational group that meets possible and precise cases during the COVID-19 process, and also have primary responsibility for the follow-up and treatment of these patients. According to the COVID-19 study unit, there was a statistically significant difference between Group1 and Group 3 in terms of THS scores. THS acting thought was statistically different between Group 2 and Group 3, between Group 1 and Group 3, and THS alternative thoughts were statistically different between Group 3 and Group 1. Besides, the staff that lived separately from their families during the COVID-19 pandemic had significantly higher scores on both the THS acting thought and the THS alternative thoughts. If the person is prevented, she/he should be able to predict alternative ways in order to continue thinking hopefully. It was observed that individuals with high levels of hope produced more alternative ways. People with high levels of hope have more life goals and can produce more strategies to achieve these goals [16]. Staff that lives separately from their families may have more motivation than those who live with their families.

In our study, the alternative thought scores of the men were significantly higher than those of women. The change in the level of hope varies according to gender. For example, there are studies indicating that men have higher levels of hope compared to women, even though they are not examined according to subgroups [17].

Coping with stress is cognitive and behavioral efforts that individuals make to learn to reduce or tolerate negative or stressful life events [11]. Individuals develop various methods to deal with the stressful life events they encounter in their lives. A positive significant correlation was found between the CSS and STAI scores in the study. This shows us that as individuals' anxiety levels increase, they try harder to cope with stress.

In the study, the ability of groups to cope with stress varies according to their educational level, and the CSS scores of the people with high school and under-graduate degrees were found to be significantly higher than university graduates. Among the professional groups, the CSS scores of the nurses and other health personnel were found to be significantly higher than the doctors. This may be due to the fact that the staff with lower education level uses negative methods to deal with stress more, and the influence of variable factors such as problem-solving skills and personality traits.

There are studies supporting our study data showing that people with poor health can find effective ways to cope if their hope level is high [18]. In another study conducted with patients with breast cancer, it was determined that patients with high hope levels used their coping strategies more [19]. A positive significant correlation was found between the CSS and THS scores of the whole group in our study. As people try to cope with stress, they may tend to increase their hope levels. With these data, our study revealed that coping attitudes, which are effective in reducing the symptoms of anxiety triggered by stress, are associated with high levels of hope.

Perceived social support is the support that the individual perceives individually as she/he thinks that she/he is loved by others and that other people will help him/her in difficult times [20]. This material and moral support that the person feels protects the individual's mental and physical health in stressful situations. Since social support is provided through social relations, social isolation applied in cases of epidemic disease will make it difficult for the individual to establish and maintain relationships with people. According to the data obtained in the study, As perceived support scores increased, THS scores also increased. Arslantaş et al. have studies supporting our study, which reveals that perceived social support is negatively correlated to hopelessness [21]. In the negative correlation between MDPSSS and STAI scores, anxiety levels decreased as the social support perceived by the staff increased. Kaya et al. (2012) mentioned that social support is a concept that acts as a buffer for the negative effects of stress in the workplace and plays an effective role in reducing the stress level as a result of the work done on unit officers in the health institution [22]. Our study shows that increasing the social support that individuals receive from their friends, their environment, and work environment reduces their anxiety levels.

It is clear that all pandemics primarily endanger the physical and psychosocial health of healthcare professionals working in the outbreak. In this study, it has been revealed that functional coping attitudes and perceived social support, which are effective in reducing the symptoms of anxiety triggered by stress in healthcare professionals during the pandemic period, are associated with high levels of hope. The level of hope, attitudes to cope with perceived stress, perceived support, and anxiety levels differ according to demographic characteristics. The level of hope is positively associated with the coping strategies and perceived multi-dimensional social support. Trait and state anxiety predicts coping with stress positively and multi-dimensional perceived support negatively. As the anxiety levels of the staff increase, their coping attitudes increase and their perceived social support decreases. It can be thought that socio-demographic features that do not predict hope levels in the study are due to research conducted on different samples and different study groups.

The limitations of our study are that the sample consists of healthcare professionals working in two hospitals in total during the pandemic, and the data collected are obtained with self-report-based scales. Evaluations based on self-report may cause individuals to respond biased or the pattern other than awareness cannot be evaluated. In conclusion, although both group comparisons and correlational analyzes are included in this study, the cross-sectional design of the research limits the interpretation of the cause and effect relation. Although the relationship between hope and coping with stress, trait, and state anxiety, perceived support has been addressed in the current study, the lack of consideration of the predictive role of these variables makes it difficult to comment on this issue.

Scientific Responsibility Statement
The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement
All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with

the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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